

11.9.3 Quarries Proposed

To meet the requirement of coarse and fine aggregates for all components of the project, two rock quarries and one river borne material borrow area have been identified as follows:

- a) Rock Quarry above BRO Road to Hiron, and
- b) RBM borrow area along Shi Chu River, and
- c) Rock Quarry along Tagurshit Nala,

The extent of the raw material to be obtained from all the above is detailed in Annexure-11C. As per Annexure-11C, the following table details the quantity of raw material required from each of the identified quarry areas.

Table 11-9: Details of quantity of raw material required from quarries

Quarry	Coarse Aggregate	Fine Aggregate	Total aggregate Required	Total Material required including losses (38%)
Rock Quarry above BRO Road at Hiron	7.27 Lac cum.	3.63 Lac cum.	10.89 Lac cum	15.04 Lac cum.
RBM borrow area along Shi Chu River				
Rock Quarry along Tagurshit Nala	17.14 Lac cum.	8.57 Lac cum.	25.71 Lac cum.	35.48 Lac cum

11.9.4 Potential of the Quarries

The potential of quarries has been computed for Hiron Quarry Area (refer Figures 11.24, 11.24-1 & 11.24-2) and for Tagurshit Quarry Area (refer Figures 11.25 11.25-1 & 11.25-2). The potential at each of the quarry sites is as follows:

Table 11-10: Potential of raw material available at each of the quarry sites

Quarry	Potential (Borrow Measure)	Potential (Bulk Measure) =(Borrow Measure)/0.67
Rock Quarry above BRO Road at Hiron	15.04 Lac cum.	22.45 Lac cum.
RBM borrow area along Shi Chu River	1 Lac cum.	1 Lac cum.
Rock Quarry along Tagurshit Nala	35.48 Lac cum.	52.95 Lac cum.

11.9.5 Proposal for raw material supply from each quarry site

The following table elucidates the potential capacity and the excess quantity available after utilizing it to meet the presently assessed requirement.

Table 11-11: Potential & excess of raw material availability from each quarry

Quarry	Potential (Bulk Measure)	Requirement	Net Supply	Excess potential available
Rock Quarry above BRO Road to Hirong	22.04 Lac cum.	16.04 Lac cum.	15.04 Lac cum.	(RBM borrow area is not rechargeable. It will be recharged in case of excavated material is used in construction)
RBM borrow area along Shi Chu River	1 Lac cum.		1 Lac cum.	
Rock Quarry along Tagurshit Nala	52.95 Lac cum.	28.57 Lac cum.	35.48 Lac cum.	6.91 Lac cum.

11.9.6 Development of the Quarries

▪ Hirong Quarry

To approach the top of the quarry, Road R-2 starting from the BRO Road to Hirong will first be constructed. The mining will be done from top to bottom and the raw material so obtained will be lifted from the platform to be developed at the base.

Before starting the excavation activities, all the trees falling in the quarry area would be removed so that the excavated muck/material flows unhindered to the bottom of the slope up to the lifting platform.

The blasting pattern will be optimized in a manner that would yield fairly fragmented material with optimum explosive charge. The objective would be to reduce the rejection of oversize material at the aggregate plant site and reduce the extent of secondary blasting of boulders.

The excavation would be done in steps of 15 m height and a bench of 3 m width would be provided after every 15m cut to provide stability to the cut slopes. The benches will be given lateral slope to the hillside to prevent rain water from flowing over the slopes and damaging them.

▪ Tagurshit Nala Quarry

An approach road R-14 would be made to reach the base of the Tagurshit Nala quarry (refer figure 11.25 11.25-1 & 11.25-2) from the permanent road to powerhouse. A temporary

bridge of about 42.5 m span would be constructed to cross the Tagurshit Nala with deck level at El. 900±.

For excavation purposes, the cut would be taken up from the lifting platform itself which would proceed towards the interior of the quarry area. In this case also, the cutting would be done in slopes and benches as proposed for the Hirong quarry.

- Borrow Area along Shi Chu River

A borrow area for obtaining raw material has been identified along the Shi Chu river up stream of its confluence with Siyom River. The potential has been computed by adopting a depth of 2 m average, as deeper excavation more than 2 m under water would reduce the yield of already meager percentage of fines. It has a potential of about 1.0 Lac cum, which would get recharged in the monsoons. An access path/ramp to approach the river bed would be constructed from the BRO road from near the BB Camp.

11.9.7 Conclusion

The above table clarifies that the RBM Borrow area is completely consumed. In fact, the borrow area would be recharged every year in the monsoons and can be reused in the subsequent period. But this added renewal potential has not been accounted for in the above computations and may be treated as a standby quantity.

11.10 Construction Power

Construction power would not be available for the project from any resources in the state. The requirement would have to be met only by installing diesel generating sets. The requirement of construction power would vary at each individual site depending upon the equipment deployed. The details thereof have been worked out and included in **Volume-II Chapter 3** on “Construction Methodology and Plant Planning”.

11.11 Requirement of Land

11.11.1 Land Requirement

Land would be required for locating the permanent works as well as for setting up the infrastructural facilities necessary for constructing the project in an expeditious and optimal manner.